

MGT 388 Finance and Law for Engineers

Finance Lecture 1 Notes

What is accounting?

Accounting is concerned with collecting, analysing, and communicating financial information.

“The process of identifying, measuring and communicating economic information to permit informed judgements and decisions by users of the information.”

Examples of decisions:

1. Formulating organisational strategies and long-range plans
2. Resource allocation decisions- e.g., product and customer emphasis and pricing
3. Cost planning and cost control of operations and activities
4. Performance measurement and evaluation of people
5. Meeting external regulatory and legal reporting requirements

(Horngren, 2005).

How a working knowledge of accounting can help you in the future.

Accounting is a central part of a business information system. Decisions on plans, projects, investments, fund raising and hiring of employees are not made without reference to the financial implications.

This is not only the case for a business with a profit-making objective, but also non-profit organisations, research and development centres will not be awarded funding unless there is evidence of a return or the potential for a return.

Some examples from real cases

Institute of Engineering and Technology

“To be successful in a competitive market you must combine your technical abilities with sound commercial judgement”.

National Career Service

“Typical aspects of an engineer’s role will include assessing if projects are feasible, planning the requirements of a project, preparing bids for tender, overseeing a processing plant and managing a team”.

Civil Engineering

“You may be responsible for projects and teams, so you will need to make sure you estimate your expenditure accurately and then seek to control those costs”.

Chemical Engineering

“Careers in the energy, waste food and pharmaceutical sectors are commonplace. You may be involved in researching a new product how will you decide if the benefit outweighs any costs. Which costs are relevant? How do you determine the financial benefit accruing at a future date? How do you determine whether to carry on? A project will need to be technically and commercially feasible”.

Materials engineer (YouTube)

“You may be required to develop some adhesive material to use in commercial projects and to decide whether to continue to full scale production”.

IT

“Will a project be profitable? If you are in business on your own account, how do you determine the price for the service you provide? How do you assess the credit worthiness of customers? Where should you obtain funding from?”

Beverley Gibbs

“When I was a 23-year-old Production Engineer in polymer processing, I was asked to both identify and perform process improvement projects. I realised that by adding a crystallising agent to a polypropylene line I could speed up the cycle time. I designed a trial did the processing and compliance testing. This was successful so I calculated the extra costs for the material and the machine time that would be saved. This calculation produced a profit of £250,000 per year. However, the project was not taken on this is because the extra cost of materials led to cash outflow, but the machine time saved could not bring any extra revenue, and as it was a fixed cost did not reduce costs. Therefore, from a business perspective it was not commercially feasible”.

Financial Accounting

The field of accounting deals with the preparation of financial statements that are to be used by users external to an organisation.

The objective of financial statements is *“to provide information about the financial position, performance and changes in financial position of an entity that is useful to a wide range of users in making economic decision”* (International Accounting Standard Board - IASB Framework).

Financial position- wealth/worth (assets/liabilities/equity)

Financial performance – profit/loss (revenues/expenses)

(e.g., for a bank account the financial position would be the funds held in the account at a point in time; the financial performance of the bank account is the interest/profit that it has earned).

Economic decisions – to invest in the company, to work for the company, to supply the company with goods, to loan funds to the company.

Annual Report = Accounts = Financial statements

This refers to the annual financial information that is published by a company under regulations and which is subject to an audit. The Annual Reports of major companies now also contain a lot of narrative information only some of which is regulated.

The information in the annual reports can be used as a marketing tool by the company to attract customers, suppliers of finance, good press as well as investors. They will highlight a company's objectives which may be profit focused, but as the importance of corporate social responsibility has become more widely recognised there will be other objectives.

The annual report contains financial statements together with notes explaining them:

- 1) The income statement (also referred to as 'statement of profit or loss' or 'profit and loss account')
- 2) The statement of financial position (also referred to as 'balance sheet')
- 3) The statement of cash flow (also referred to as 'cash flow statement').

Income Statement

Income Statement = Profit and Loss Account

The income statement details the profit that a company has made over the year. It provides information on the financial performance of the company.

BOC HONG COMPANY		
INCOME STATEMENT		
FOR THE YEAR ENDED DECEMBER 31, 2019		
Net sales		\$2,972,413
Cost of goods sold		<u>1,982,541</u>
Gross profit		989,872
Selling expenses (see Note D)	\$453,028	
Administrative expenses	<u>350,771</u>	803,799
Other income and expense		<u>171,410</u>
Income from operations		357,483
Interest expense		<u>126,060</u>
Income before income tax		231,423
Income tax		<u>66,934</u>
Net income for the year		\$ 164,489
Attributable to:		
Shareholders of Boc Hong		\$ 120,000
Non-controlling interest		44,489
Earnings per share		\$1.74

Revenue = Turnover = Sales

This caption should only include income from the main business (lines of operation) that the company is involved in. Income from other investments or one-off sources should be included elsewhere.

Cost of sales

This caption includes all the expenses/costs that are involved in manufacturing and producing the product that the company sells.

It includes:

Opening inventory	X
Add Purchases	X
Less Closing inventory	(X)
Add production costs	<u>X</u>
Cost of sales	<u>X</u>

Gross Profit

As revenue and cost of sales do not contain any one-off items, gross profit is a basic guide of how successful the core business of a company is. It compares the revenue from selling the product a company produces directly with the costs of that production.

Selling Expenses

This caption includes all the selling, marketing and distribution costs incurred by a company.

Note D: Selling expenses	
Sales salaries and commissions	\$202,644
Sales office salaries	59,200
Travel and entertainment	48,940
Advertising expense	38,315
Delivery expense	41,209
Shipping supplies and expense	24,712
Postage and stationery	16,788
Telephone and Internet expense	12,215
Depreciation of sales equipment	9,005
Total selling expenses	<u>\$453,028</u>

Administration Expenses

This caption includes all the office-based costs of a company. These might include accountant and lawyer fees, debt collection services, invoicing and some director costs.

Operating Profit

This highlights the profit the business has generated from its operation. The figure is likely to be more volatile than the gross profit figure because one-off cost can be included in administration and selling expenses. A successful business will try and keep a tight control of the administration and selling costs. In a competitive marketplace this is very important.

Finance Charges

Payments of interest on loans, leases, and overdrafts. A business would be in trouble if the finance charges were more than the operating profit.

Statement of Financial Position

Statement of financial position = Balance Sheet

This statement shows the worth of a company. It provides information on the financial position of the company.

SCIENTIFIC PRODUCTS, INC. STATEMENT OF FINANCIAL POSITION DECEMBER 31, 2019			
Assets			
Non-current assets			
<i>Long-term investments</i>			
Investments in held-for-collection securities		\$ 82,000	
Land held for future development		5,500	\$ 87,500
<i>Property, plant, and equipment</i>			
Land		125,000	
Buildings	\$975,800		
Less: Accumulated depreciation	341,200	634,600	
Total property, plant, and equipment			759,600
<i>Intangible assets</i>			
Capitalized development costs		6,000	
Goodwill		66,000	
Other identifiable intangible assets		28,000	100,000
Total non-current assets			947,100
Current assets			
Inventory		489,713	
Prepaid expenses		16,252	
Accounts receivable	165,824		
Less: Allowance for doubtful accounts	1,850	163,974	
Short-term investments		51,030	
Cash and cash equivalents		52,485	
Total current assets			773,454
Total assets			\$1,720,554

Equity and Liabilities			
Equity			
Share capital—preference	\$300,000		
Share capital—ordinary	400,000		
Share premium—preference	10,000		
Share premium—ordinary	27,500		
Retained earnings	170,482		
Accumulated other comprehensive income (loss)	(8,650)		
Less: Treasury shares	12,750		
Equity attributable to owners		\$886,582	
Non-controlling interest		13,500	
Total equity			\$ 900,082
Non-current liabilities			
Bond liabilities due January 31, 2028	425,000		
Provisions related to pensions	75,000		
Total non-current liabilities		500,000	
Current liabilities			
Notes payable	80,000		
Accounts payable	197,532		
Interest payable	20,500		
Salaries and wages payable	5,560		
Provisions related to warranties	12,500		
Deposits received from customers	4,380		
Total current liabilities		320,472	
Total liabilities			820,472
Total equity and liabilities			\$1,720,554

Assets

Assets are resources that are controlled by an entity that are expected to bring economic benefits, (generate profits). Assets can be split into two categories:

Non-current assets – are to be owned for longer than 12 months (or the operating cycle*, whichever is longer).

Current assets – owned at the reporting date but are to be used by the business to make profits in the next 12 months (or the operating cycle*, whichever is longer).

**Glossary: An operating cycle refers to the time it takes a company to buy goods, sell them and receive cash from the sale of said goods.*

Non-Current Assets = Fixed Assets

- E.g., Buildings, furniture, machinery, and motor vehicles. These are tangible assets.
- E.g., Brands, patents, and goodwill. These are intangible assets.

Current assets

- Inventory=stock

These are the goods that the company intends to sell but has not yet sold. They are the items that the company manufactures/trades in and will comprise of finished goods, part finished goods known as work in progress, and raw materials. The three components raw materials, work in progress and finished goods are added together to provide an inventory figure.

- Trade receivables= Debtors

This is money that the company is owed from its customers at the reporting date.

- Prepayment - bills paid in advance.

Liabilities

A liability is an obligation of an entity arising from a past event the settlement of which involves the transfer of resources (an amount owing by the business).

Liabilities can be split into categories:

Non- Current – the payment of liability is due after 12 months (or the operating cycle*, whichever is longer).

Current – the payment of the liability is due within the next 12 months (or the operating cycle*, whichever is longer).

Non-Current Liabilities

- Bank loan repayable in 2/3/4...5 years, debentures, loan notes, sometimes preference shares.

Current Liabilities

- Trade payables = creditors

Amounts the business owes to suppliers of raw materials etc.

- Accruals

Amounts the business owes in respect of bills not yet received, but where the business has used the service or products. Outstanding amounts owed on gas/electricity bills.

Equity

Equity represents “the residual interest in the assets of the entity after deducting all the liabilities”.

Equity belongs to the owners of the company who are the shareholders.

Accounting Equation

ASSETS = LIABILITIES + EQUITY

The assets of a business equal the finance provided to the business by both third parties and the owners.

The accounting equation follows the separate entity concept, it looks at the financial position from the company perspective. What the company owns (assets) is set against what the company owes to the providers of finance (liabilities plus equity).

For the accounting equation to balance one transaction leads to two entries (Double Entry Concept). For example, a company buys a car for cash. The asset motor vehicles will increase, and the asset cash will decrease by the same amount.

If money is borrowed from a bank to buy a car, the asset car and the liability loans will both increase by the same amount.

Please have a look at this short video:

[The Accounting Equation for beginners](#)

Statement of Cash Flow

NESTOR SA STATEMENT OF CASH FLOWS FOR THE YEAR ENDED DECEMBER 31, 2019		
Cash flows from operating activities		
Net income		€320,750
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation expense	€88,400	
Amortization of intangibles	16,300	
Gain on sale of plant assets	(8,700)	
Increase in accounts receivable (net)	(11,000)	
Decrease in inventory	15,500	
Decrease in accounts payable	(9,500)	91,000
Net cash provided by operating activities		411,750
Cash flows from investing activities		
Sale of plant assets	90,500	
Purchase of equipment	(182,500)	
Purchase of land	(70,000)	
Net cash used by investing activities		(162,000)
Cash flows from financing activities		
Payment of cash dividend	(19,800)	
Issuance of ordinary shares	100,000	
Redemption of bonds	(50,000)	
Net cash provided by financing activities		30,200
Net increase in cash		279,950
Cash at beginning of year		135,000
Cash at end of year		€414,950¹

¹**Cash Flow Note**
A non-cash investing and financing activity was the purchase of equipment through issuance of €50,000 of bonds.

Final note for students

The MGT388 students will not be expected to prepare a set of financial statements.

It is expected that you will understand the information that the various statements present to users and that you will be able to look at an Annual Report and make some judgements about the company.